		Exploring the E	extreme
		2009 Mathem	
		Standards of Le	earning
Virginia Mathematic	S		
Grade K			
Activity/Lesson	State	Standards	
			The student will identify the instruments used
			to measure length (ruler), weight (scale),
			time (clock: digital and analog; calendar: day,
Finding the Center of			month, and season), and temperature
Gravity Using Rulers	VA	MA.K.K.8	(thermometer).
		Exploring the E	
		2009 Mathem	
		Standards of Le	earning
Virginia Mathematic	s		
Grade 1			
Activity/Lesson	State	Standards	
Finding the Center of			The student will use nonstandard units to
Gravity Using Rulers	VA	MA.1.1.9	measure length, weight/mass, and volume.
	•	Exploring the E	xtreme
		2009 Mathem	atics
		Standards of Le	earning
Virginia Mathematic	S		
Grade 2			
Activity/Lesson	State	Standards	
•			
Finding the Center of			The student will estimate and measure
Gravity Using Rulers	VA	MA.2.2.11.a	length to the nearest centimeter and inch;
			The student will estimate and measure
Finding the Center of			weight/mass of objects in pounds/ounces
Gravity Using Rulers	VA	MA.2.2.11.b	and kilograms/grams, using a scale; and
, ,			
		Exploring the E	xtreme
		2009 Mathem	
		Standards of Le	
Virginia Mathematic	S		
Grade 3			
Activity/Lesson	State	Standards	
, tour inj,			The student will estimate and use U.S.
			Customary and metric units to measure
Finding the Center of			length to the nearest 1/2-inch, inch, foot,
Gravity Using Rulers		MA.3.3.9.a	yard, centimeter, and meter;
2.3, 259 (3.00)			The student will estimate and use U.S.
			Customary and metric units to measure
Finding the Center of			weight/mass in ounces, pounds, grams, and
Gravity Using Rulers		MA.3.3.9.c	kilograms; and
Cravity Coming Maiors	V/1	1417 (.0.0.0.0	The student will collect and organize data,
Finding the Center of			using observations, measurements, surveys,
Gravity Using Rulers		MA.3.3.17.a	or experiments;
Cravity Using Ruleis	v /\	IVI∕A.J.J. I I .d	or experiments,

			The student will estimate and use U.S.
Finding the Center of			
Finding the Center of			Customary and metric units to measure
Gravity Using Plumb			length to the nearest 1/2-inch, inch, foot,
Lines	VA	MA.3.3.9.a	yard, centimeter, and meter;
L			The student will estimate and use U.S.
Finding the Center of			Customary and metric units to measure
Gravity Using Plumb			weight/mass in ounces, pounds, grams, and
Lines	VA	MA.3.3.9.c	kilograms; and
			The student will recognize and describe a
Finding the Center of			variety of patterns formed using numbers,
Gravity Using Plumb			tables, and pictures, and extend the
Lines	VA	MA.3.3.19	patterns, using the same or different forms.
			The student will estimate and use U.S.
Changing the Center			Customary and metric units to measure
of Gravity Using			length to the nearest 1/2-inch, inch, foot,
Moment Arms	VA	MA.3.3.9.a	yard, centimeter, and meter;
Moment Anns	VA	IVIA.S.S.S.a	The student will estimate and use U.S.
Changing the Center			Customary and metric units to measure
of Gravity Using			weight/mass in ounces, pounds, grams, and
Moment Arms	VA	MA.3.3.9.c	kilograms; and
Changing the Center			The student will collect and organize data,
of Gravity Using			using observations, measurements, surveys,
Moment Arms	VA	MA.3.3.17.a	or experiments;
	E	xploring the Ex	treme
		2009 Mathema	tics
	S	tandards of Lea	arning
Virginia Mathematic	S		
Virginia Mathematic Grade 4	s		
	State	Standards	
Grade 4		Standards	The students will estimate and measure
Grade 4		Standards	The students will estimate and measure weight/mass and describe the results in U.S.
Grade 4 Activity/Lesson	State	Standards	weight/mass and describe the results in U.S.
Grade 4 Activity/Lesson Finding the Center of	State	Standards MA.4.4.6.a	
Grade 4 Activity/Lesson	State		weight/mass and describe the results in U.S. Customary and metric units as appropriate; and
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers	State VA		weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of	State VA	MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers	State VA		weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers	State VA VA	MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers	State VA VA	MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S.
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb	State VA VA	MA.4.4.6.a MA.4.4.7.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate;
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines	VA VA	MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of	VA VA	MA.4.4.6.a MA.4.4.7.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb	VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of	VA VA	MA.4.4.6.a MA.4.4.7.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb	VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb	VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb Lines Changing the Center of Changing the Center of Changing the Center	VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S.
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using	VA VA VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a MA.4.4.7.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate;
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Moment Arms	VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Moment Arms Changing the Center	VA VA VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a MA.4.4.7.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure
Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Moment Arms Changing the Center of Gravity Using	VA VA VA VA	MA.4.4.6.a MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric
Grade 4 Activity/Lesson Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Rulers Finding the Center of Gravity Using Plumb Lines Finding the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Plumb Lines Changing the Center of Gravity Using Moment Arms Changing the Center	VA VA VA VA	MA.4.4.6.a MA.4.4.7.a MA.4.4.6.a MA.4.4.7.a	weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure length, and describe the result in both metric and U.S. Customary units; and The student will estimate and measure weight/mass and describe the results in U.S. Customary and metric units as appropriate; and The student will estimate and measure

		Exploring the E	extreme
		2009 Mathem	
		Standards of L	earning
Virginia Mathemat	ics		
Grade 5			
Activity/Lesson	State	Standards	
			write an appropriate to represent a given
let Prepulsion	VA	MA.5.5.18.b	write an open sentence to represent a given
Jet Propulsion	VA	IVIA.3.3.16.D	mathematical relationship, using a variable; investigate and describe the concept of
Vectoring	VA	MA.5.5.18.a	variable;
Vectoring	VA	IVIA.3.3.10.a	variable,
			write an open sentence to represent a given
Vectoring	VA	MA.5.5.18.b	mathematical relationship, using a variable;
- Cottoning	1		estimate and then measure to solve
Center of Gravity,			problems, using U.S. Customary and metric
Pitch, Yaw	VA	MA.5.5.8.d	units; and
·			
	'	Exploring the E	Extreme
		2009 Mathem	natics
		Standards of L	earning
Virginia Mathemat	ics		
Grade 6			
Activity/Lesson	State	Standards	
Center of Gravity,			The student will investigate and describe
Pitch, Yaw	VA	MA.6.6.2.a	fractions, decimals, and percents as ratios;
Center of Gravity,			The student will identify a given fraction,
Pitch, Yaw	VA	MA.6.6.2.b	decimal, or percent from a representation;
On the state of Owner the			The student will demonstrate equivalent
Center of Gravity,	VA	MAGGGG	relationships among fractions, decimals, and
Pitch, Yaw Center of Gravity,	VA	MA.6.6.2.c	percents; and The student will compare and order
Pitch, Yaw	VA	MA.6.6.2.d	fractions, decimals, and percents.
Filcii, Taw	VA	IVIA.0.0.2.u	The student will make ballpark comparisons
			between measurements in the U.S.
Center of Gravity,			Customary System of measurement and
Pitch, Yaw	VA	MA.6.6.9	measurements in the metric system.
	1		
		Exploring the E	Extreme
		2009 Mathem	
		Standards of L	
Virginia Mathemat	ics		
Grade 7			
Activity/Lesson	State	Standards	
			The student will compare and order
Center of Gravity,			fractions, decimals, percents, and numbers
Pitch, Yaw	VA	MA.7.7.1.c	written in scientific notation;
Center of Gravity,			The student will add, subtract, multiply, and
Pitch, Yaw	VA	MA.7.7.3.b	divide integers.
		:	The student will add, subtract, multiply, and
Fuel Efficiency	VA	MA.7.7.3.b	divide integers.

			The student will evaluate algebraic							
			expressions for given replacement values of							
Fuel Efficiency	VA	MA.7.7.13.b	the variables.							
Exploring the Extreme 2009 Mathematics Standards of Learning										
							Virginia Mathemat	ics		
							Grade 8			
Activity/Lesson	State	Standards								
			The student will compare and order							
Center of Gravity,			decimals, fractions, percents, and numbers							
Pitch, Yaw	VA	MA.8.8.1.b	written in scientific notation.							
			The student will solve practical problems							
Center of Gravity,			involving rational numbers, percents, ratios,							
Pitch, Yaw	VA	MA.8.8.3.a	and proportions							
			The student will solve practical problems							
			involving rational numbers, percents, ratios,							
Fuel Efficiency	VA	MA.8.8.3.a	and proportions							
			The student will determine the percent							
Fuel Efficiency	VA	MA.8.8.3.b	increase or decrease for a given situation.							
			The student will apply the order of operations							
			to evaluate algebraic expressions for given							
Fuel Efficiency	VA	MA.8.8.4	replacement values of the variables.							
			The student will make connections between							
			any two representations (tables, graphs,							
Fuel Efficiency	VA	MA.8.8.14	words, and rules) of a given relationship.							